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THE IMPACT OF CD-ROM ON THE END USER AND LIBRARIAN

by

D G Law

Derek Law is Librarian of King's College London. He has been active in library automation for twenty years and is at present a member of the Information Systems Committee (formerly Computer Board) of the UFC

The paper considers the experience of users in dealing with this new technology.

Its advantages and disadvantages are considered and it is concluded that, on balance, the technology is of benefit.

It is a great pleasure for me to be hear today. Usually I get invited to give lectures in places like Aberdeen or Milton Keynes. Once I was invited to lecture in Wagga Wagga and couldn't decide if that was a subtle insult. To be invited to give a talk within 200 yards of my own office is therefore pleasantly travel free. It is also nice to have a fresh audience before which I can ride my hobby-horses. With that brief preamble, let me turn to CD.

In April 1990 King's College Hospital Medical School celebrated its 150th Anniversary with a service of thanksgiving in Westminster Abbey, held in the presence of Queen Elizabeth, the Archbishop of Canterbury and the Chief Rabbi. As part of the service, various items were carried to the high altar and blessed; they included early medical instruments, life-saving and life enhancing drugs - and a compact disc of the MEDLINE database. Interestingly, this was carried, at his request, by a professor of immunology and not by a librarian. The following day this service was reported in the Court pages of *The Times* (1), since The Queen had attended the service. We can thus safely assume that, blessed by the church, attended by royalty and carried by a professor, the compact disc has arrived safely as a part of the established order of things. It is quite remarkable how, in the short space of three or four years, CD-ROM has become part of the bibliographic establishment. However, there are already dissenting voices which have begun to stress the limitations of CD and to suggest that its status and importance will come to be seen as comparable to microform (2). There is worry over its small filesizes, its slowness, its incompatible operating systems, the threat of computer viruses and the inability to deal with serious networking. There are substantial issues here

which I shall discuss later, but from the users perspective we can ignore these, for reasons which I shall also discuss, and concentrate on the positive side. This paper will therefore look at the advantages and disadvantages from the perspective of the user and the librarian in an attempt to assess the value of the technology as a tool delivering a public service to a mass audience.

Most of the advantages may seem evident, but that makes them none the less important. The first of these advantages lies in the presentation of the data. Although this varies from product to product, some trends are obvious. The use of colour, of windows, of highlighting and of menus, make searches and search results much easier to comprehend than the often cramped, printed format of most large reference works and bibliographies and is substantially in advance of the sort of presentation achieved by even the best on-line library catalogues. We face some years before all networks are upgraded to the point where they will be able to deliver comparable presentation facilities on their OPAC's. For the moment, CD-ROM simply looks better than anything else in the library which we allow the user to touch.

The second advantage lies in the sheer power of the system, although it is true that in general on-line databases possess the same facilities. Boolean searches, the ability to combine terms and to combine the results of several searches provide enormous capabilities. It has been the common practice in libraries to use a librarian as an intermediary for on-line searching and it is therefore only with the arrival of CD that most users have managed the power of these search features for

themselves. Quite complicated searching which in the past was either impossible or inordinately time-consuming quite suddenly lies within the reach of anyone performing research. There is a certain almost intoxicating effect in having the ability to control this power and personally to undertake difficult tasks.

Thirdly, the absence of an intermediary allows two benefits. The first is the absence of telecommunications charges, which thus allows the user to browse at will through the file. The second is the removal of the need to talk to librarians. It is possible to use the privacy afforded to ask peculiar or arbitrary questions, sometimes with serendipitous results. Most researchers will stress the value of chance whether in browsing through shelves of books and journals or browsing through a database. It has been commented on that a notable feature of CD-ROM is the repeated use made by individuals (3). Where academic researchers may use on-line searches mediated by the library on average once a year, it is clear that CD may be used more than once a month. It is quite simple to follow a stray thought or idea on a casual visit to the library which the user would not bother to follow up when faced with the need to make an appointment with an information specialist perhaps a week ahead. Although it would be unfair to compare visiting the on-line searcher with a visit to the dentist, most users are relieved to be left alone to help themselves.

Fourthly the systems are simple to use. It is possible to sit down and achieve results almost immediately. Friendly menu-driven systems allow the uninitiated to conduct searches within minutes. It has to be said that this is a two edged benefit.

Almost all the library literature stresses the need for the training of users, and, indeed at least one library has made it compulsory (4). Because a technology appears easy to use and produces results does not mean that the naive user can use it efficiently and effectively. Bonta (5) has cited the case of senior students using CD-ROM to find references from *Time* and *National Geographic* for detailed information on the causes of the Russian Revolution. Many databases do not make it clear that the set of information they contain is partial, or that certain sets of knowledge are assumed. For example, one database on modern literature cites all titles in the original language and assumes that users will know this. Thus a user searching for information on Ibsen's play *A Doll's House* will find nothing unless the original Norwegian title is used. Because there are no standards and no consistency between products, the user is very much at the mercy of the system designer. This criticism can be overplayed however. Most libraries spend more on reference books than on CD products, but no library insists that the user of a reference book must undergo training in its use or have the assistance of a qualified librarian for every book they open. The new style *Encyclopaedia Britannica* is more difficult to use than the old, but reference librarians do not insist on training in its use.

Fifthly, a subsidiary benefit which some libraries make available is the ability either to print out or download search results, which can then be removed thus freeing the reader from the tedium of copying from reference works. Some exciting developments are also being made by American libraries in linking the search results to the library catalogue. It thus becomes practical to conduct a

search, save the results and in the same computer session compare these with the library journal holdings to check on availability (6). It is only a tiny step to request the articles in stock using electronic mail. The whole process of search and retrieval of information becomes almost a single operation rather than a sequential one requiring interaction with several parts of the library. Sadly, if we follow our normal traditions, librarians will find a way to make such developments as inconvenient for the user as possible. As an implicit and accidental subsidiary benefit, there should be an improvement in the quality of bibliographic citation. Once a standard citation or bibliographic entry is downloaded from a CD to a personal computer it can be re-used in booklists or other publications and will always be correct - or at least as correct as the original source.

Sixthly, there is the general issue of accessibility. This has several aspects. The CD is in the library and readily available, at least during opening hours. From the users point of view it is all too easy to forget the sheer physical difficulty of conducting an extended search in a work such as the British Library Catalogue of Printed Books, consisting of several hundred volumes shelved at heights varying from ground level to two metres, often in cramped and dusty surroundings. Further, many libraries are conducting extensive experiments into networking and this again makes the product more widely available. Beyond that, it is clear that CD is not simply a library product. A survey has shown (7) that at least in the UK, around one third of purchases are made outside the library. An increasing number of users will purchase the database which is most central to their activity

and use it in preference to the library. Accessibility is also democratised. Many libraries in developing countries and indeed smaller and poorer libraries in developed countries will feel able to purchase or otherwise acquire systems where at the moment they are unable to access the data due to high telecommunications costs. In all cases CD can make available data never previously published, or allow searching in new ways - such as by title rather than author - in publications such as the catalogues of major libraries.

Finally, there are other forms of 'value-added' benefit. One of the best examples is the incorporation of a Greek language word processor in the IBYCUS system used for the Thesaurus Linguae Graecae CD. This enormously enhances the capabilities of the system, allowing document creation and presentation which pull in data from the CD, as well as conventional searching. It would be greatly to the users benefit if the concept of adding value to datasets on CD were to grow.

DISADVANTAGES

Naturally, not all is perfect with these products. The complaints tend to fall into two groups, either administrative or technical. Most are capable of resolution, but this will require time and effort on the part of librarians and producers. On the technical side, some problems will remain for so long as the technology of the players remains linked to the audio CD market, the base from which the library CD developed and that is essentially optimised for the linear retrieval of an audio signal, then made to work by courtesy of our ingenuity. Most suppliers will

inevitably concentrate on market penetration rather than hardware development, since the library market is scarcely large enough to sustain separately developed hardware. Equally, while the technology remains the prisoner of the PC - DOS environment, even allowing for the MSCDEX extensions, it will be unreceptive to multi-user multi-tasking environments.

Most other technical problems relate in some way to standards. With the development of the so-called High Sierra standard for hardware and the notable standards work by the European national libraries, led by the British Library, it might be assumed that most systems were compatible. In practice there is a horrendous variety of software and systems. One report suggests that there may be as many as fifty different command languages (8) and it is unreasonable to expect the user to cope with this. In many cases the system has to be rebooted before a different disc can be used and this makes it difficult for most users to work with a number of systems. Users have to invest a lot of effort in coming to grips with a new technology and there is a clear limit to their tolerance of the varieties of system we offer. Although there are aspirations for a common command language no one has the authority to enforce it and, particularly where the same database is involved, it is precisely the differences rather than the similarities which allow sales staff to claim that their product is better. For them, different is good, not bad, news. Nor are systems always as friendly as they at first seem. In at least one system, repeated use of the Page Down Key quickly fills up the machine buffer and brings such elegant and user friendly messages as "FATAL. Internal stack Failure, System Halted". To be fair, most users still find

this better than the old systems. It is always unfair to compare an imperfect present with a perfect past, for the perfection of the past exists only in memory.

One of the touted benefits of CD is the amount of data which can be stored on each disc. Although technical developments are slowly expanding this, disc capacity is really quite small when related to users needs. It may be a technical achievement to put a single year of the *British National Bibliography* onto a single disc, but the user may wish to search a ten, twenty or thirty year file and what is needed is access to terabytes not megabytes of filestore. Changing discs is a nuisance and in some cases searches cannot be stored and repeated without rekeying. Some suppliers have been doing excellent work in developing economic tower stacks which allow several discs to be searched, but few libraries have yet invested in these. To look at networking masses of CD's poses not only technical difficulties, but raises serious strategic funding decisions.

It is a well known effect of OPAC's that many users cease to use the card catalogue even when it is made perfectly clear that the retroconversion, and therefore the OPAC, is incomplete. The same is true of CD. Users will settle for what is available from the system, even if it is incomplete. More discerning users comment and worry about the time coverage of the CD, but also about the content, for example how many and which journals have been abstracted and indexed. Worries about currency are also there, but this problem is well understood if not approved of, and does not of course apply to stable or retrospective sets of data. Another major issue lies in the ownership of the data. Suppliers, having invested

heavily in CD production begin to make what appear to be bizarre. Some prices are crazily high; some suppliers will only lease rather than sell the discs; some charge license fees for networking. Worse, these licences, which are in effect site licences are entirely negotiable. I have seen one fee varying from \$3000 to £78,000 US Dollars. Publishers are beginning to argue for transaction based rather than subscription based charges. Copyright exists and may be variously and contradictorily shared by data owner, disc publisher, dbms software provider. The common salesman's approach of "do what you like but don't tell me" is hopelessly inadequate as a basis on which to develop a major new service provision. Against this networking mess we must set the heavy investment being made in SUPERJANET and national dataset provision, which opens up the highest quality provision to the end-user.

On the administrative side, most problems lie with under-provision. The take up of CD in the United Kingdom has been much slower than enthusiasts had predicted. There is a certain 'arcade' effect with the technology because of its novelty and quality. As small boys will pretend to play computer games on arcade machines in which they have put no money, CD systems attract staff and students to experiment with systems although they have no real object in view. Few libraries can afford more than one or two systems, far less multiple copies of systems (10). Thus, when faced with a choice of duplicating a heavily used product or buying a different product, most libraries follow the time-honoured tradition of buying what posterity might need rather than what existing users need. As a result, most institutions have had to develop some kind of booking system in

order to ration and restrict use. This defeats one of the major advantages, that of casual, promiscuous and unplanned browsing. This can also introduce a tension with library staff, at least for bibliographic data. Acquisitions and cataloguing staff require to use their working tools in a random and unplanned way, yet this conflicts with the heavy and timetabled use of systems in many libraries.

Many libraries adopt the practice of introducing a charging mechanism for new services. While this is an understandable method of funding the introduction of new services it is an undeniable irritant to find small sums extorted for such things as printing off search results. There seems to be an imbalance to the user between spending thousands of pounds on printed reference works and appearing to charge for the use of another reference work which happens to use a different medium. As a librarian I know why this is done. As a user I see trifling sums of money being taken from me, knowing that it probably costs more to administer the system than the revenue it generates. Sometimes we insist that users must have instruction, like passing a driving test for a car. This is well intentioned, but somehow slightly insulting. Sometimes we switch the machines off when no member of library staff is on hand. That induces real frustration as many users know more about pc's than library reference staff and cannot understand why the machine has to sit idle. Sometimes we keep the disks behind the service desk and make users sign them out. The nuisance here is that there is then the whole performance of booting up the system before it can be used.

It is easy to find papers or attend conferences on the good use of CD-ROM. It is easy to forget that it is the libraries making good use of the technology who write or deliver these papers. We never hear from the average or poor libraries which is what most users face. In most of them librarians still have to deploy the technology to best advantage. For the moment they are engaged in arguments over cleaning computer screens, loading printer paper and changing ink-jets.(11)

CONCLUSIONS

CD-ROM has very serious technical limitations which only become apparent when one attempts to use several products. Much of this difficulty arises from an absence of standards in search software or from the inherent limits of the technology. Nevertheless, where libraries install systems and the library is committed to making them readily accessible to the end user, and indeed to customising menus and software for ease of use, the CD becomes easily the most usable tool in the library. Despite reservations on issues to do with training, the user finds the system easy to use and capable of producing results which were previously impossible or which would have required months of effort. At a lower level, complicated searches require seconds rather than hours. This is extremely welcome. Users have a limited amount of time each week for information retrieval, processing and analysis. By reducing the time spent in searching for relevant material, the technology increases the time available for the analysis of documents, thus making the whole research process more efficient. It also, at least to a degree, removes the dependence on 'big' technology and telecommunications

so that users throughout the world have, at least in theory, access to data on equal terms and the fear of a developing information rich, information poor divide may begin to recede. We should see it as an interim technology for libraries and for networking, but as a radically new personal information tool aimed at the single user, single use, single machine, rough ready and populist. It is all too easy to confuse the medium with the message. The true revolution created by CD is distributing databases to endusers at reasonable cost and providing lovely interfaces which are truly user-friendly. That is what we have to build on, not the medium itself.